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(19) (CA) **CANADIAN PATENT** (12)

(54) CONSTRUCTION PANEL

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No. OF CLAIMS 11

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#### ABSTRACT OF THE DISCLOSURE

A building construction panel having, along a first marginal portion, first and second engaging means, and along a parallel second marginal portion a single engaging means adapted to engage either the first or second engaging means on the first marginal portion of an adjacent panel so that the panels can be disposed in lap or flush relation as desired, one of the portions of each panel terminating at a flange extending outwardly of the panel for use in connecting the panel to a building.

THE EMBODIMENT OF THE INVENTION IN WHICH AN EXCLUSIVE  
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. An elongated construction panel having a constant cross-section and comprising:

a main portion having a front face which is fully exposed on assembly of the panel with other such panels on a building in a flush condition, and which is partly covered on assembly with other such panels in a lapped condition, the main portion having transverse extremities;

marginal first and second portions dependant from said respective transverse extremities of the main portion and extending longitudinally of the panel, these portions extending generally rearwardly with respect to the main portion of the panel;

said first portion defining a first engagement means and a second engagement means spaced rearwardly and outwardly with respect to the first engagement means and terminating in a flange extending outwardly beyond the second engagement means in generally parallel relationship with the main portion for use in attaching the panel to said building; and

said second portion defining a third engagement means adapted to selectively co-operate with a similar other panel both in a lapped and in a flush condition, so that in the lapped condition said third engagement means combines with a first engagement means of the other panel and contains a part of the front face of the other panel adjacent its first engagement means, and so that in the flush condi-

tion said third engagement means combines with the second engagement means of the other panel and said front face and that of the other panel are essentially coplanar and the respective corresponding transverse extremities are adjacent one another.

2. An elongated construction panel as claimed in claim 1 in which the second portion includes a flat portion between the third engagement means and said front face of the panel, a substantial part of said flat portion being exposed with the panels in the lapped condition.

3. An elongated construction panel as claimed in claim 1 in which adjacent said panels define longitudinally extending surface recesses between the panels in the flush position for receiving decorative trim.

4. An elongated construction panel having a constant cross-section and defining marginal first and second portions extending longitudinally of the panel and projecting generally rearwardly with respect to a front of the panel which is exposed on assembly of the panel on a building, said first portion defining a first recess and terminating in a first flange adjacent the recess, the first flange extending outwardly of the panel, said second portion defining a second recess and terminating in a second flange spaced rearwardly from the second recess and extending outwardly from the panel so that the second flange can be engaged in a said first recess of another panel to produce a lapped siding effect, the first flange being used to attach the panel to said building, and so that the first flange can be engaged in a said second recess of another

panel to produce a flush siding effect, the second flange then being used to attach the panel to said building.

5. A construction panel as claimed in claim 1 in which the first and second engagement means are of similar shape.

6. A construction panel as claimed in claim 1 in which one of said first and second engagement means defines a rib and the other of these means defines a recess, the third engagement means being shaped to receive such a rib on said another panel or to engage in such a recess on said another panel according to said selective co-operation.

7. A construction panel as claimed in claim 1 in which said first and second engagement means are ribs and in which said third engagement means is a channel.

8. A construction panel as claimed in claim 1 in which said first and second engagement means are substantially parallel-sided channels and in which the third engagement means is a flange for engagement in such channels.

9. An elongated construction panel having a constant cross-section and comprising:

a main portion having a front face which is fully exposed on assembly of the panel with other such panels on a building in a flush condition, and which is partly covered on assembly with other such panels in a lapped condition, the main portion having transverse extremities;

marginal first and second portions dependent from said respective transverse extremities of the main portion and extending longitudinally of the panel, these portions

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extending generally rearwardly with respect to the main portion of the panel;

said first portion defining a first channel and a second channel spaced rearwardly of the first channel and terminating in a first flange extending outwardly beyond the extremity of the main portion and being in generally parallel relationship with the main portion for use in attaching the panel to said building;

said second portion defining a second flange : spaced rearwardly of the main portion and adapted to selectively co-operate with a further panel both in a lapped and in a flush condition so that in the lapped condition the second flange is contained in the second channel and an adjacent part of the front face of the further panel is contained in said first portion, and in the flush condition the second flange is contained in the first channel and the front faces of the respective panel and of the further panel are essentially coplanar.

10. An elongated construction panel having a constant cross-section and comprising:

a main portion having a front face which is fully exposed on assembly of the panel with other such panels on a building in a flush condition, and which is partly covered on assembly with other such panels in a lapped condition, the main portion having transverse extremities;

marginal first and second portions dependent from said respective transverse extremities of the main portion and extending longitudinally of the panel, these portions extending generally rearwardly with respect to the main portion of the panel;

said first portion defining: first and second channels, the second channel being spaced rearwardly with respect to the first channel; an intermediate portion extending between the channels; and a nose portion extending from the first channel to the associated transverse extremity of the main portion, the nose portion being spaced outwardly with respect to the intermediate portion;

said second portion defining a rib, a forward land extending inwardly from the main portion and terminating at the rib, a rearward land lying inwardly with respect to the forward land and extending rearwardly, and a flange extending outwardly from the rearward land in generally parallel relationship with the main portion, the rib being adapted to engage selectively in either another second channel of a further panel for producing a lapped siding effect in which the forward land and the intermediate portion of the further panel are substantially in face-to-face contact and an adjacent part of the front face of the panel is covered, or in another first channel of the further panel for producing a flush siding effect in which the front face of the panel is exposed fully.

11. An elongated construction panel having a substantially constant cross-section and comprising:

a main portion having a front face which is exposed on assembly of the panel with other such panels on a building in a flush condition, and which is partly covered on assembly with other such panels in a lapped condition, the main portion having transverse extremities;

marginal first and second portions dependent from said respective transverse extremities of the main portion

and extending longitudinally of the panel, these portions extending generally rearwardly with respect to the main portion of the panel;

said first and second portions defining respective complementary first and second engagement means such that the first and second engagement means of the panel are engageable respectively with other second and first engagement means of another panel both in a flush first position such that said main portion lies substantially in the same plane as the main portion of said another panel and is exposed fully, and in a second position such that said main portion and the main portion of said another panel are spaced generally parallel with one another and a part of the main portion of the panel is covered by said another panel; and

at least one of the first and second portions defining means adapted to attach the panel to a wall.





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This invention relates to prefabricated construction materials and more particularly to prefabricated metal or plastic cladding materials.

10 Sheet metal and plastic cladding materials for constructional use are well known and take many different forms. Metals such as aluminum and steel may be pre-coated to provide long lasting decorative finishes and plastic claddings may be provided with any desired colour or surface finish. Cladding materials for ceilings, soffits, sidings and the like are usually prefabricated in suitable sized lengths and widths to provide a desired surface effect and to facilitate handling of the individual pieces. Joints between pieces are generally covered by an overlap, and each piece is generally interlocked or interconnected with the next piece using any one of a number of known interlocking systems.

20 Generally, however, because of the need to securely interlock the panels so as to ensure a weather-tight surface, and a desire to provide a variety of decorative surface configurations, each type of cladding material is designed for a specific end use. Ceiling and soffit, vertical siding panels and at least one type of horizontal siding are usually applied so as to present a weathering or decorative surface that is essentially flush. Most other prefabricated horizontal siding panels are designed to be applied in a slightly zig zag configuration so as to simulate conventional lap or wood bevel siding. As with wood

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siding it is desirable to partially overlap each panel with the lower edge of the panel immediately above it so that the cladding can readily shed water.

The inventory of differently shaped pieces required by the stockist and applicator for various constructional uses is relatively large and costly to maintain. Furthermore, the wastage during cutting and installation is also relatively high because it is not usually possible to utilize the inevitable short lengths which  
10 accrue for other purposes. For example, during the installation of preformed metal and plastic lap siding it has heretofore not been possible to utilize the short scrap lengths for soffit panels, which are usually applied in flush configuration. It will be appreciated, therefore, that inventory and installation of cladding could be much simplified if a system could be devised which would enable use of the same panel for both lap or flush application for either siding or soffit and which could be produced using the same dies on a single piece of forming equipment,  
20 ment, such as rolls or extruders.

U.S. Patent 2,642,968 to Roush et al teaches a panel for use in a prefabricated house structure. The panel can be attached in both the flush and overlap configurations and requires specially formed uprights to receive the panels. For this reason the panels taught by Roush could not be used on buildings generally. Also the Roush panels would require very accurate alignment for proper interlocking with one another and such alignment would be found only on  
30 prefabricated structures. Further, if the alignment

is not accurate in the overlap condition gaps would appear between adjacent panels at the point of misalignment resulting in an unacceptable appearance. In the overlap condition the underside of each panel displays an upwardly extending channel which can shelter insects and which also detracts significantly from the overall appearance of the siding. For these reasons the Roush structure would not be acceptable for applicant's purpose.

10 It is an object of the present invention to provide panels formed to permit using the panels as vertical or horizontal siding, soffit or other application in either flush or lap relation as desired on existing as well as new building structures.

Thus in one of its aspects this invention provides a construction panel having, along a first marginal edge thereof, first and second engaging means and, along a parallel second marginal edge thereof, third engaging means for interengagement with either said first or said second engaging means of an adjacent said panel whereby  
20 adjacent said panels may be disposed in abutting relation to selectively position and retain a face of the panels alternatively flush or lapped.

The invention will be described in more detail hereinafter with reference to the drawings in which:

Fig. 1 is a sectional view of one embodiment of construction panels according to the present invention, the panels being in a lap configuration;

Fig. 2 is a sectional view of the panels of Fig. 1 showing the panels in a flush configuration; and

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Figs. 3 to 10 are composite schematic sectional views showing alternative embodiments of construction panels according to the present invention, each Fig. showing one embodiment in both flush and lap configurations.

It will be appreciated that although the embodiments are drawn to show panels in both flush and lap configurations, in practice the panels would be applied in one configuration or the other. It will further be appreciated that the panels of the present invention may be applied as siding in either the vertical or horizontal mode, that is with the joints either perpendicular or parallel to the base of the building, or as soffit or ceiling panels, and that various decorative effects can be achieved by mixing the manner of installation. The present invention is applicable to any conventional panel material such as sheet metal or plastic.

Reference is made initially to Figs. 1 and 2 to describe a preferred embodiment of the invention. An aluminum panel is shown having a constant cross-section and extending longitudinally on the side of a building. The panel is formed of sheet material and has a main portion 1 defining a front face which terminates at transverse extremities. A first portion 2 extends longitudinally of the panel and depends from one of the transverse extremities. The portion extends rearwardly and defines a pair of longitudinally extending projecting ribs 3 and 4 spaced in parallel with one another and terminating at a flange 5 extending outwardly and through which

nails 6 may be driven to secure the panel along its length to a substrate or frame 10. A second portion 7 depends from the other transverse extremity and defines a longitudinally extending channel 8 adapted to receive either one of the ribs 3 and 4. When recess 8 is located on rib 3 as in Fig. 1, the panels are assembled in lap siding configuration. A drop-in backer board 9 may be required for insulation and rigidity of the finished structure.

10 When channel 8 is received on rib 4 (as in Fig. 2) the panels are assembled in flush configuration and, depending upon the application, a backer board may or may not be required. It will be appreciated that the flush configuration of Fig. 2 is particularly suited for use as a soffit and no backer board is normally required for this application.

20 It should be noted that as seen in Figs. 1 and 2 the ribs 3 and 4 are both spaced in parallel and spaced transversely of the panel so that when the rib 4 is engaged in channel 8 the rib 3 does not interfere with the location of the rib 4 in channel 8. Also, in the overlap condition the channel 8 contains a part of a front face of the main portion 1 of the panel. Consequently, if for any reason the rib 3 does not engage fully in the channel 8 the external appearance will not be affected because unlike the aforementioned Roush structure no crack or opening will be seen between the panels. This interengagement in which a part of the main portion is contained behind the adjacent panel is therefore of importance in understanding the requirements which the present structure must meet when it

is being installed on less than perfect building surfaces. Variations in shape will be described with reference to other embodiments which also exhibit this feature.

It will be evident that this overlap condition requires the ribs 3 and 4 to be staggered both outwardly and rearwardly so that in the overlap condition the upper panel (as drawn) is lower than it would be in the flush condition.

10 Fig. 3 shows a modification of the embodiment of Figs. 1 and 2 wherein modified ribs 33 and 34 are also at different levels and in which there is provided a recess 35 adjacent rib 33 to receive and interlock a tail 36 of recess 37 when the panels are assembled in the lap configuration. Tail 36 is received and interlocks with modified ribs 34 and an associated recess 38 when the panels are assembled in the flush configuration.

20 Fig. 4 shows a further modification of Fig. 3 in which modified ribs 43 and 44 are at different levels and are hook-shaped and the recess 37 of Fig. 3 has been replaced by a hook 47 adapted to engage under hook-shaped ribs 43 or 44 in locking engagement in the lap or flush configurations respectively. It will be noted that in the flush configuration, wherein hook 47 engages hook-shaped rib 44, there is provided a surface recess 48 which may be filled with a decorative strip or batten if desired.

30 Fig. 5 is somewhat similar to Figs. 1 and 3 and shows channels or slots 63 and 64, at different levels, adapted to receive the single locking hook 65 of an adjoining panel for assembly in either the flush or lap configuration.

Fig. 6 illustrates a further modification of the embodiment of Fig. 5 for application from the bottom up. Slots 73 and 74 are provided with locking recesses 75 and 76, and a hook 77 has an additional locking device 78 adapted for reception by recesses 75 and 76. Nails 79 are driven through flange 80 to assemble the siding from the bottom up.

10 It will be appreciated that each of the foregoing embodiments can only be installed from the bottom up when used as horizontal siding, as is usual with conventional lap siding material.

Fig. 7 illustrates an embodiment which differs from previous embodiments in that it is installed from the top for flush application and from the bottom for lap application.

20 As seen in Fig. 7 a panel is provided which uses either regular nails or specially shaped "L" or "T" nails, 83 and 82 respectively which interlock with nailing flanges on the cladding material. Unlike Fig. 6 however, the Fig. 7 embodiment has first and second engaging means 84 and 85 respectively along one marginal portion of the panel and a third and fourth engaging means 86 and 87 respectively along the other or parallel marginal portion of the panel for selective engagement of engaging means 85 with engaging means 86 and engaging means 84 with engaging means 87 of a corresponding adjacent panel so as to dispose the panel in lap siding of flush relation respectively.

30 Fig. 8 shows an embodiment which is particularly suited for siding and soffits, and which has along a first marginal edge a lug 93 and a hook-shaped recess

means 94 for selective engagement with engaging means 91, of an adjacent panel which is adapted to engage lug 93 in lap relation or be received by recess 94 when disposed in flush relation.

Fig. 9 shows a further embodiment in which the upper portion (as drawn) has a tongue 98, for engagement in one of two channels 96, 97 in the lower portion of an adjacent panel. The tongue is offset rearwardly from a main portion of the panel by a land 99 which is received in a recess 100 from which the channels 96, 97 both extend inwardly. In the lap condition the tongue 98 is in the channel 97 and the land 99 is contained in the recess 100 so that a front portion 101 lies outwardly of the main portion of the panel. A part of the main portion is then contained in the recess 100.

Fig. 10 illustrates yet another embodiment. This embodiment differs from most of the previous embodiments in that the portion of the panel defining a flange 102 is associated with only one engagement means whereas others have been associated with two. In this case a rib 103 is provided forwardly of the flange 102 and separated from the flange by a rearward land 104. A forward land 105 extends between the ribs 103 and a main portion 106 of the panel. This latter land is spaced inwardly from the land 104.

The other marginal portion of the panel defines a pair of channels 107, 108. Channel 108 is spaced inwardly and rearwardly with respect to channel 107 and an intermediate portion 109 extends between the channels and is spaced inwardly with respect to a nose



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portion 110. Consequently, a part of the front face of main portion 106 is contained behind the nose portion with the panels in the lapped condition.

Although the invention has been illustrated extensively with reference to rolled sections in aluminum sheet, the invention is equally applicable to rolled extruded, moulded or other sections in aluminum, steel, copper or other sheet metal and also to thermosetting and thermoplastic resinous materials and to inorganic materials such as asbestos, cement, wood and paper fibres which are conventionally fabricated into sheet form for cladding purposes.

It will also be appreciated that the drawings are illustrative only of the concept of the invention and are not limiting thereon, the scope of the invention being defined by the appended claims.

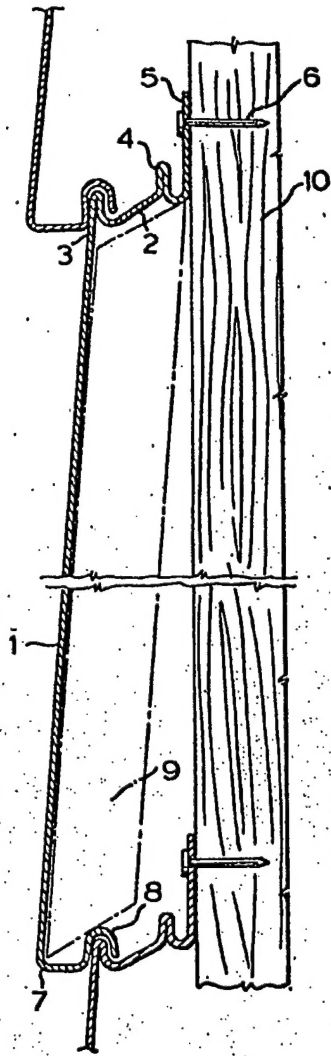


FIG. 1

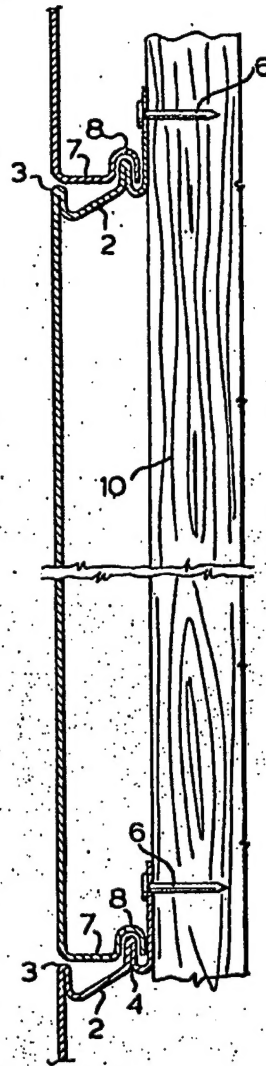


FIG. 2

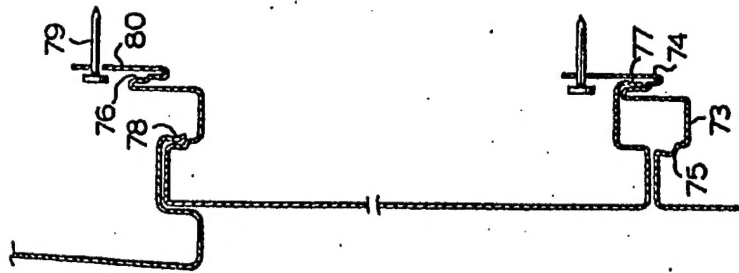


FIG. 6

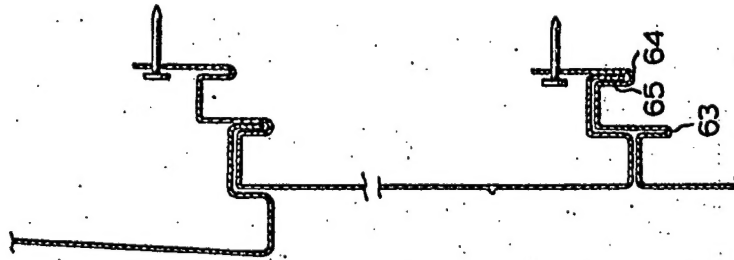


FIG. 5

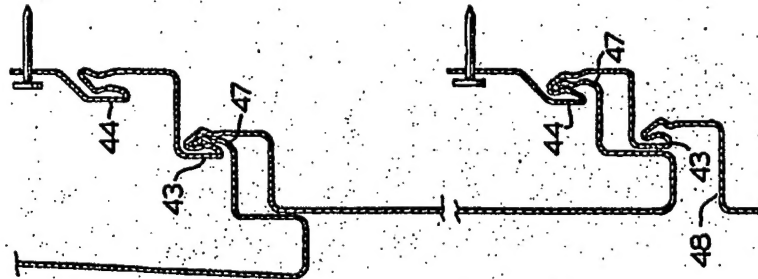


FIG. 4

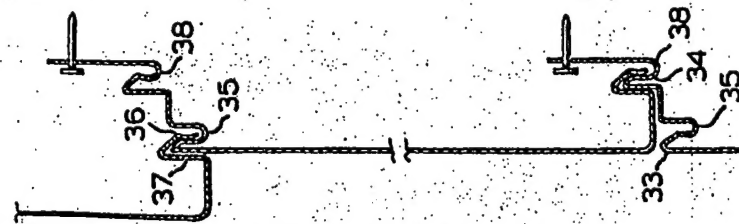


FIG. 3

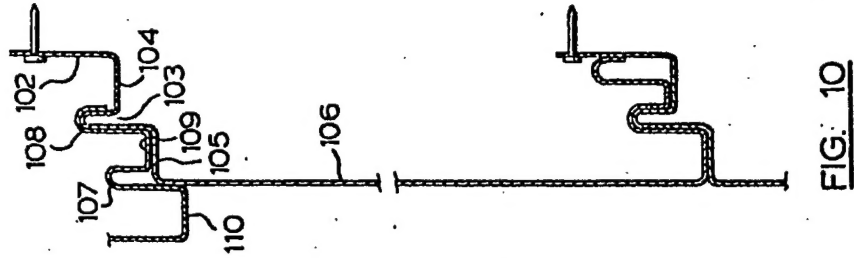


FIG. 10

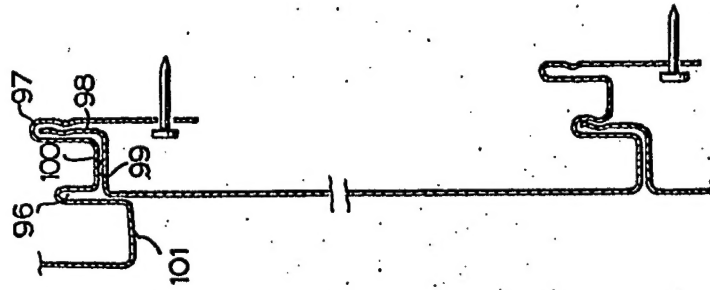


FIG. 9

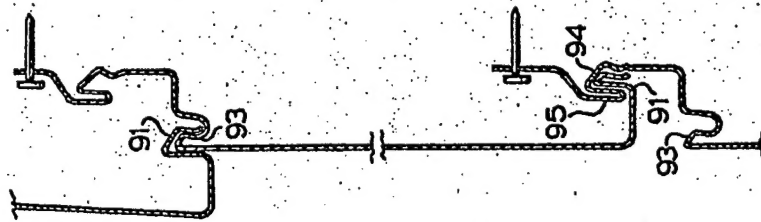


FIG. 8

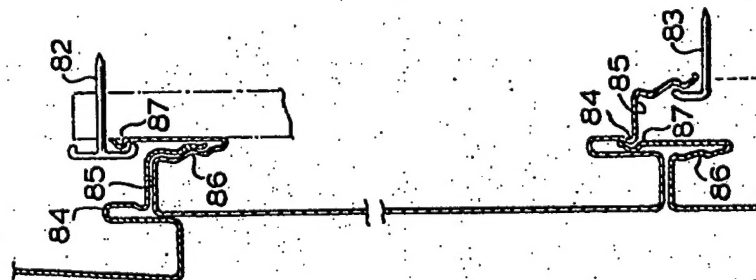


FIG. 7